

AMENDMENTS TO THE DRAWINGS

The attached “Replacement Sheet” of drawings includes changes to Figure 3. The attached “Replacement Sheet,” which includes Figure 3, replaces the original sheet including Figure 3.

Attachment: Replacement Sheet

REMARKS

Reconsideration of the present application is requested. Claims 1-22 are pending. FIG. 3 has been amended only to correct a minor typographical error. No new matter has been added.

INFORMATION DISCLOSURE STATEMENTS

Applicant appreciates the Examiner's consideration of the Information Disclosure Statements filed April 21, 2004, July 20, 2004, February 17, 2006 and April 6, 2006.

PRIORITY

The Examiner has acknowledged Applicant's claim for foreign priority and receipt of certified copies of the priority documents.

DRAWINGS

The Examiner has accepted the drawings. However, to correct a minor typographical error, FIG. 3 has been amended. In particular, reference character '53' has been replaced with reference character '23'.

AN EXAMPLE EMBODIMENT OF A LIQUID CRYSTAL DISPLAY

FIG. 1 illustrates a liquid crystal display (LCD) according to an example embodiment. Referring to FIG. 1, the LCD may include a memory 21 storing a current data D(i,j,k). A look-up table 23 may store combinations of previous data D(i,j,k-1) and the current data D(i,j,k) and may output signals to a control means 24. The control means 24 may output an output signal DAT2 as corrected current data to facilitate gray scale transition from the previous time

to the current time based on the output signals from the look-up table 23. The corrected current data DAT2 output by the control means 24 may be an interpolated version of corresponding data.

The LCD may further include a heater 5 and a heater control means 7. The heater 5 may heat the liquid crystal panel 2. The heater control means 7 may control the heater 5 such that a temperature of the liquid crystal panel 2 remains within +/- 3°C of a target temperature, wherein the target temperature is within a range between 33°C and 63 °C.

PRIOR ART REJECTION

§ 103 REJECTION IN VIEW OF MIYATA AND DAVIS

The Examiner rejects claims 1-2, 4-8, 10-14 and 16-22 under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. Patent Publication No. 2002/0033789 ("Miyata") in view of U.S. Patent No. 5,027,111 ("Davis"). This rejection is respectfully traversed.

Claim 1 is directed to a liquid crystal display (LCD). In accordance with the LCD of claim 1, circuits for estimating a temperature and controlling heating by stages are not required. The LCD of claim 1 suppresses an unnecessarily high temperature of a LCD panel due to, for example, misestimation. The LCD of claim 1 may also suppress excess brightness caused by the high temperature. Claim 1 provides an LCD with improved response speed irrespective of ambient temperature, while suppressing degradation of display quality.

The liquid crystal display of claim 1 includes, *inter alia*, a "heater control means for controlling start and stop of heating by the heater, in such a manner as to keep a temperature of the liquid crystal panel to be not more than $\pm 3^{\circ}\text{C}$ of a predetermined target temperature which is within a range between 33°C and 63°C ."

The Examiner correctly recognizes that Miyata fails to teach or fairly suggest the "heater," or the "heater control means," as required by claim 1. The Examiner relies upon column 5 of Davis to allegedly teach these features. Applicant disagrees.

Davis discloses a liquid crystal display (LCD) unit including a temperature maintaining means (117, 125, 104, 105). The temperature maintaining means maintains the temperature of the liquid crystal display (LCD) 120 within an operating range notwithstanding ambient temperature and humidity variations. In one embodiment, the temperature maintaining means (117, 125, 104, 105) holds the temperature of the LCD 120 between 160°F and -35°F (= between 71°C and -37.22°C). In another embodiment, the temperature maintaining means (117, 125, 104, 105) holds the temperature of the LCD 120 at least between 120°F and -15°F (= between 48.89°C and -26.11°C) with an ambient temperature between 115°F and -40°F (= between 46.11°C and -40°C).

Contrary to the display of claim 1, however, Davis is silent with regard to any "target temperature," and makes no mention of any limits on numerical values of such a "target temperature." Davis merely discloses ranges of

temperatures within which the temperature of the LCD is held, without any mention of a target temperature or limits on variation from such a target temperature within the disclosed temperature ranges.

Because Davis fails to make up for the admitted deficiencies of Miyata, the combination of references (assuming *arguendo* such a combination could be made, which Applicants do not admit) fails to teach or suggest at least a "heater control means for controlling start and stop of heating by the heater, in such a manner as to keep a *temperature of the liquid crystal panel to be not more than ±3°C of a predetermined target temperature which is within a range between 33°C and 63°C*," as required by claim 1. Therefore, the combination fails to render claim 1 *prima facie* obvious, and claim 1 is patentable over Miyata and Davis, taken singly or in combination.

Claims 7 and 13 distinguish over Miyata and Davis for at least somewhat similar reasons. Claims 2, 4-6, 8, 10-12, 14 and 16-22 distinguish over Miyata and Davis at least by virtue of their dependency from Claims 1, 7 or 13.

§ 103 REJECTION IN VIEW OF MIYATA, DAVIS AND HAM

The Examiner further rejects claims 3, 9 and 15 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Miyata, Davis and further in view of U.S. Patent No. 7,106,287 ("Ham"). This rejection is respectfully traversed.

Initially, Applicant respectfully submits that claims 3, 9 and 15 distinguish over Miyata, Davis and Ham for at least the reasons set forth above with regard to claims 1, 7 and 13. In addition, Applicant traverses the rejection of claims 3, 9 and 15 as follows.

The Examiner correctly recognizes that neither Miyata nor Davis teaches or fairly suggests the features of claim 3, but relies upon column 6, lines 44-54 discussing FIG. 6 of Ham to allegedly teach these features. Applicant disagrees.

According to column 6, lines 44-54 of Ham, a data modulator 52a includes look-up tables 64a to 64n. Look-up tables 64a to 64n store modulating data for each temperature interval within a temperature range and receive most significant bits of source data. A switch 65 selects modulating data from one of the look-up tables 64a to 64n in accordance with a sensed temperature from the liquid crystal display panel 57. Ham does not, however, disclose a look-up table "arranged so as to correspond to the target temperature," as required by claim 3, for example. By contrast, the switch 65 of Ham merely selects modulating data from one of a plurality of look-up tables 64a-64n based on temperature. Ham does not appear to teach or suggest that the arrangement of these look-up tables corresponds to a target temperature.

For at least the foregoing reasons, claim 3 distinguishes over Miyata, Davis and Ham. Claims 9 and 15 distinguish over Miyata, Davis and Ham for at least reasons somewhat similar to those set forth above with regard to claim 3..

CONCLUSION

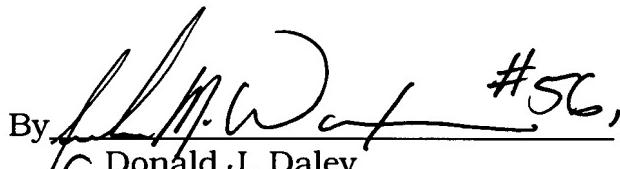
Accordingly, in view of the above amendments and remarks, reconsideration of the objections and rejections and allowance of each of claims 1-22 in connection with the present application is earnestly solicited.

If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone Andrew M. Waxman, Reg. No. 56,007, at the number of the undersigned listed below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKEY & PIERCE, PLC

By  #56,007
Donald J. Daley
Reg. No. 34,313

DJD/AMW:krm

P.O. Box 8910
Reston, VA 20195
(703) 668-8000